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OCCASIONAL PAPER

Perspectives on the Battle of Wanat

Challenges Facing Small Unit Operations in Afghanistan

Randall Steeb • John Matsumura • Thomas J. Herbert
John Gordon IV • William W. Horn

Prepared for the United States Army

RAND ARROYO CENTER

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Preface

This research was conducted as a rapid response study by RAND Arroyo Center at the request of the Army Quadrennial Defense Review (QDR) Office within Army G-8. Its charter is to explore alternatives for improving ongoing small unit operations in Afghanistan, which could also have applicability to future venues. At the specific request of the sponsor, this effort attempts to provide a more "hands-on" look at the situation that platoon-sized units face in establishing combat outposts (COPs). We use the battle of Wanat as a case study to explore and evaluate a range of alternative technological and corresponding tactical improvements. This is the first paper in a series, and it focuses on developing a tactical-level understanding of the circumstances that the small unit faced as it transitioned from a vehicle patrol base to a COP. Two subsequent papers will focus on technologies and tactics, or alternative concepts, that could improve future outcomes for such small units.

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Acknowledgments

The authors would like to express their gratitude to the many people who contributed directly to this research. First, we are very appreciative of the soldiers who generously gave their time and shared their personal experiences to help make this study more accurate than would otherwise have been possible. In addition to participating in large roundtable discussions hosted by the G-8 focusing on gathering lessons learned from those recently returning from Afghanistan, we had the opportunity to have more in-depth discussions with several COP commanders. These included CPT Stoney Portis, MAJ Joseph Evans, CPT George Rhynedance, LT Richard Rowe, and LT Nathan Pfaff. We would also like to thank Paul Kozemchak at the Defense Advanced Research Projects Agency (DARPA) for sharing his ideas on technology and tactics that might be useful for such force protection situations. At RAND, Bruce Held, Richard Hoffman, Robert Moore, and David E. Johnson provided very thorough reviews of this work, resulting in a more refined write-up. Last, we thank Tim Muchmore and Donald Tison, the sponsors of this research, who not only provided leadership but also access to information that was ultimately used to develop the research that led to this paper.

Abbreviations

AMSAA	Army Materiel Systems Analysis Activity
ANA	Afghanistan National Army
BCT	Brigade Combat Team
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
COP	combat outpost
CP	command post
DARPA	Defense Advanced Research Projects Agency
FLIR	forward looking infrared
FPL	final protective line
HESCO	Hercules Engineering Solutions Consortium
HMMWV	high-mobility multipurpose wheeled vehicle
ISR	intelligence, surveillance, and reconnaissance
ITAS	Improved Target Acquisition System
LIDAR	Light (Laser) Imaging Detection and Ranging
LOS	line of sight
LRAS3	Long-Range Advance Scout Surveillance System
LZ	landing zone
METT-TC	Mission, Enemy, Terrain, Troops–Time, Civilians
MSR	main supply route
OP	observation post
QDR	Quadrennial Defense Review
RPG	rocket-propelled grenade
TOW	tube-launched, optically tracked, wire command-link

TTP	tactics, techniques, and procedures
UAS	unmanned aircraft system
VPB	vehicle patrol base

CHAPTER ONE

Introduction

Combat Outpost (COP) Kahler[1] was a small, remote outpost in northeast Afghanistan adjacent to the village of Wanat in the Nuristan Province, manned by 48 U.S. soldiers and 24 Afghanistan National Army (ANA) soldiers and their three U.S. Marine Corps advisors. It was attacked on July 13, 2008, by a significantly larger number of Taliban insurgent forces that used stealth, camouflage, communications discipline, and rapid movement over extremely rough mountainous terrain to establish positions close to the COP's perimeter. The insurgents used coordinated rocket-propelled grenades (RPGs), small arms and heavy machine gun fire, and mortar barrages to inflict heavy casualties on the outpost. Ultimately, nine U.S. soldiers were killed and 27 U.S. and four ANA soldiers were wounded. The COP was soon thereafter abandoned.[2] These kinds of attacks have subsequently occurred and are likely to continue as insurgents contest the presence of coalition forces. Although U.S. soldiers have superior training and technology, the question is being asked, Are there better ways to protect such small units in the near term?

To answer this question, the RAND Arroyo Center research team is conducting analyses to help identify what can be done to help in the near future (from now and out to the next few years). Though some aspects of this battle at Wanat were the result of unique circumstances of this situation—for example, the vehicle patrol base was in the process of transitioning to a COP—this battle has much in common with other small unit engagements that have occurred in Afghanistan. To explore where different capabilities could reduce the vulnerabilities of small units, the research team analyzed this particular battle in detail using analytic modeling and simulation methods. In this paper, we describe the combat situation as it occurred and identify the key conditions that the small unit faced. We then discuss what the constructive simulation of the battle suggests and postulate feasible near-term protection, surveillance, and weapons options with the goal of reducing or preventing casualties in similar future situations. In the coming months, these postulated capabilities will be explored in detail using modeling and simulation as well as other appropriate analytic methods.

It is important to state at the outset that this research is not intended to second-guess or criticize the tactics or decisions that U.S. soldiers made at the time of the battle. Assessing their performance in the battle is the Army's internal business and therefore beyond the scope of this study. Rather, our goal is to explore possible technologies and corresponding tactics that could potentially improve the effectiveness of U.S. forces facing similar situations in the future. We

[1] COP Kahler is sometimes referred to as Vehicle Patrol Base Kahler; it was in the process of being converted to a COP when the attack occurred.

[2] I. Sellin, "Wanat Afghanistan, Tactical Victory, Strategic Defeat," UPI Asia.com, March 19, 2010.

fully believe that the troops on the ground at Wanat fought bravely and effectively given the information and resources they had available at the time. Learning from their experience is an essential element of this research. It is hoped that the Army will be able to use various aspects of this research, including possibly both new technologies and tactics, to enhance the capabilities of small units that might be in situations similar to Wanat in the future.

CHAPTER TWO

Background

One challenge that U.S. forces face in Afghanistan is the requirement to protect the local population from insurgent forces. To achieve this, security forces, e.g., police as well as local and foreign military forces, are often placed in fairly close proximity to the community they are trying to protect. If the security forces are positioned too far away, they may be unable to deter Taliban insurgents from threatening local civilians. However, placing small security units close to the local population can dramatically increase the risk to those units. This proximity balance has historically represented a challenge for commanders fighting insurgencies.

The "surge" in Iraq is a good example of this dilemma. When the surge began in 2007, the number of U.S. troops in the country was increased and the method of employing them evolved. Small units, such as reinforced platoons, were positioned in and among the towns and cities to better protect the population. Unfortunately, this change resulted in an immediate and notable increase in U.S. casualties. As the months passed, however, the improved security for the local population paid off with a weakening of the insurgency. Today, as U.S. and other coalition forces shift their focus in Afghanistan toward providing more protection to rural towns and villages, they face a similar dilemma; they need to provide local populations a sense of security and, as a result, will need to stay close to that population.

COP Kahler in Afghanistan was one of many examples of the implementation of this strategy. It represented an opportunity for U.S. forces to secure the village at Wanat, located in the heart of the Waygul Valley, which is a main supply route (MSR) for Nuristan Province.[1] For these reasons, its occupation was considered necessary to accomplish the mission of the 173rd Airborne Brigade Combat Team (BCT) as a part of the Combined Joint Task Force-101. The specific site for the COP was designated by the local village leaders following extensive negotiations, months before the COP was occupied by coalition forces. While less than ideal, it satisfied the minimal requirements for COPs at the time; that is, it had ground routes for vehicle ingress and egress, and it had at least a single ship, i.e., helicopter, landing zone (LZ) for air ingress and egress.

Given the size of Afghanistan and the spread and number of villages, the dispersal of U.S. and coalition forces into small garrisons, normally the size of reinforced platoons of 50 or fewer personnel, was necessary. This troop density is thin by recent norms. In Afghanistan there are, as of this writing, roughly 95,000 U.S. and an additional 48,000 coalition troops to protect a

[1] Wanat was chosen as an alternative location for COP Bella, which was located 7 km north, but which had to be abandoned as a result of a collateral damage incident resulting in the death of a village resident and a retaliation incident resulting in the death of U.S. SFC Matthew Kahler. In effect, COP Kahler was the supplementary position for COP Bella.

population of some 29 million people.[2] This represents a lower ratio than was the case in Iraq following the surge, when there were 168,000 U.S. and roughly 15,000 coalition troops for a population of 30 million Iraqis. Additionally, at the time of the 2007–2008 surge in Iraq, there were 140,000 Iraqi army personnel to help combat insurgents. Meanwhile, in 2009, the Afghan army still numbered only 100,000 men.[3] When compared to the U.S. experience in Vietnam in the 1960s and 1970s, the troop-to-population ratio in Afghanistan is considerably lower. For example, in 1969 there were 475,000 U.S. military personnel for a population of some 13 million South Vietnamese. Overall, these numbers highlight a notable difference from Afghanistan in both manpower density and geographic dispersal along with all the risks that such a posture involves.[4] Identifying ways to improve small unit effectiveness and survivability under these conditions is one key objective of this research.

The Guerilla Threat in Afghanistan

From a different perspective, Afghanistan has a centuries-long history of warfare among themselves and against foreign invaders and occupiers.[5] As a result of these years of near continual conflict, some aspects of warfare have become ingrained into culture, resulting in a sort of "sixth sense" with regard to some tactics, particularly within this austere environment. For example, the expertise of Afghan guerrilla warfare tactics, specifically in maneuver ambushes, has been well documented by historians.[6] Also, there has been an observed adeptness at understanding details at the tactical level, which involves patience and planning.[7] Similarly, Taliban fighters are well-conditioned physically to their environment. They lead an active life and are accustomed to the high altitude, harsh climate, and dramatic seasonal variations of their environment. This physical conditioning, coupled with the fact that are not burdened with force protection gear as coalition soldiers are, make them agile opponents.

With regard to recent experience, the Taliban of today is in many ways a direct descendant of the mujahideen who fought the Soviets between 1979 and 1988. In fact, a number of today's senior Taliban commanders are veterans of the fighting against the Soviets; hence, much of the experience gained against the Soviets in the 1980s has been passed down to today's Taliban fighters. Taliban techniques being used against coalition forces include the ability to patiently

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[2] The number of U.S. military personnel in Iraq is taken from CBS News, "U.S. Troop Level in Afghanistan Surpasses Iraq," May 20, 2010.

[3] Afghan army strength is taken from "The Afghan National Army (ANA): Facts and Figures," undated.

[4] See Headquarters, Department of the Army, FM 3-24/MCWP 3-33.5: Counterinsurgency, March 2006. See also James T. Quinlivan, "Force Requirements in Stability Operations," *Parameters* (Winter 1995), pp. 59–69; and James T. Quinlivan, "Burden of Victory: The Painful Arithmetic of Stability Operations," *RAND Review*, Summer 2003, pp. 28–29. FM 3-24 notes that "Twenty counterinsurgents per 1000 residents is often considered the minimum troop density required for effective COIN [counterinsurgency] operations; however as with any fixed ratio, such calculations remain very dependent upon the situation. . . . As in any conflict, the size of the force needed to defeat an insurgency depends on the situation. However, COIN is manpower intensive because counterinsurgents must maintain widespread order and security."

[5] For example, the British in the 19th and early 20th centuries, the Soviet Union in the 1980s, and today's coalition forces (including ANA forces).

[6] A. Jalali and L. Grau, "Afghan Guerrilla Warfare: In the Words of Mujahideen Fighters," Foreign Military Studies Office, Ft. Leavensorth, Kan., 2001.

[7] Personal communication with CAPT Stoney Portis, U.S. Army commander at COP Keating, November 2010.

observe the activities of the foreign forces to find possible weaknesses, getting intelligence from the local population, skillful use of ambushes, and effective small unit tactics. These are all very similar to the techniques employed against the Soviets two decades ago. However, the Taliban lack a major outside supplier of modern weapons, which is in marked contrast to the steady flow of arms and equipment that the mujahideen received from Arab and Western countries in the 1980s. Also, there appears to be a distinction in level of commitment between the Taliban and recruited local Afghan fighters who are either hired or coerced into combat.

While Afghan insurgents have shown combined attributes of determination, stamina, and some key tactical skills, they lack the more formal military training and have much less capable equipment relative to the forces they have recently faced. Despite their eventual withdrawal from Afghanistan, the Soviets in the 1980s were able to achieve a 10-to-1 or better kill ratio against the mujahideen as a result of the superior training and equipment of their forces relative to the Afghan insurgents of that era. Today, U.S. and coalition forces in Afghanistan have far superior training and equipment relative to Taliban insurgents.[8] However, U.S. forces have been deployed as very small units (generally platoon-sized of less than 40 soldiers) into extremely remote locations. Furthermore, U.S. density of forces has been reduced; e.g., a battalion containing at the outset 15 platoon-sized COPs (specifically the 2nd Battalion, 503rd Infantry) was responsible for an area the size of the state of Connecticut. Compounded with the inability to maintain a battalion reserve,[9] key vulnerabilities can be exploited by a determined foe. As demonstrated at COP Kahler, these include using surprise, amassing overwhelming numbers, and exploiting familiarity of local terrain.[10]

The Battle at Wanat

The Taliban recognized the criticality of the U.S. outpost at Wanat, located along the historical MSR for the Waygul Valley. Accordingly, on July 13, 2008, at 4:20 a.m., well over 100 Taliban insurgents conducted a coordinated attack against the forces at COP Kahler. With virtually no warning, the insurgents attacked with RPGs, heavy machine guns, mortars, and small arms. Within the first few minutes they destroyed the long-range sensors, heavy weapons, and vehicles at the COP. The battle raged for nearly nine hours and came to an end only when large numbers of tactical air strikes, primarily Apache attack helicopters, could be brought to bear on the enemy's positions, most of which were "danger-close" (within ~550 meters) of friendly forces.[11] B-1 bombers dropped ordnance well to the north to seal the battle from further insurgent reinforcements. Direct support artillery (one each, 2-gun section of 155 mm) fired five fire missions at target reference points more than 500 meters (m) northwest of the COP, and with delayed-fuse high explosive to minimize collateral damage and the possibility of fratricide, as the fire could neither be directed nor adjusted from the COP because of diminished

[8] An interview with deployed Canadian forces leadership, Kandahar Base, February 2007, substantiates Taliban forces' limited training and effect on battle outcome.

[9] C. Campbell, "Action on the Re-Investigation in the Combat Action at Wanat Village, Waygal District, Nuristan Province, Afghanistan on 13 July 2008 (redacted)," May 13, 2010.

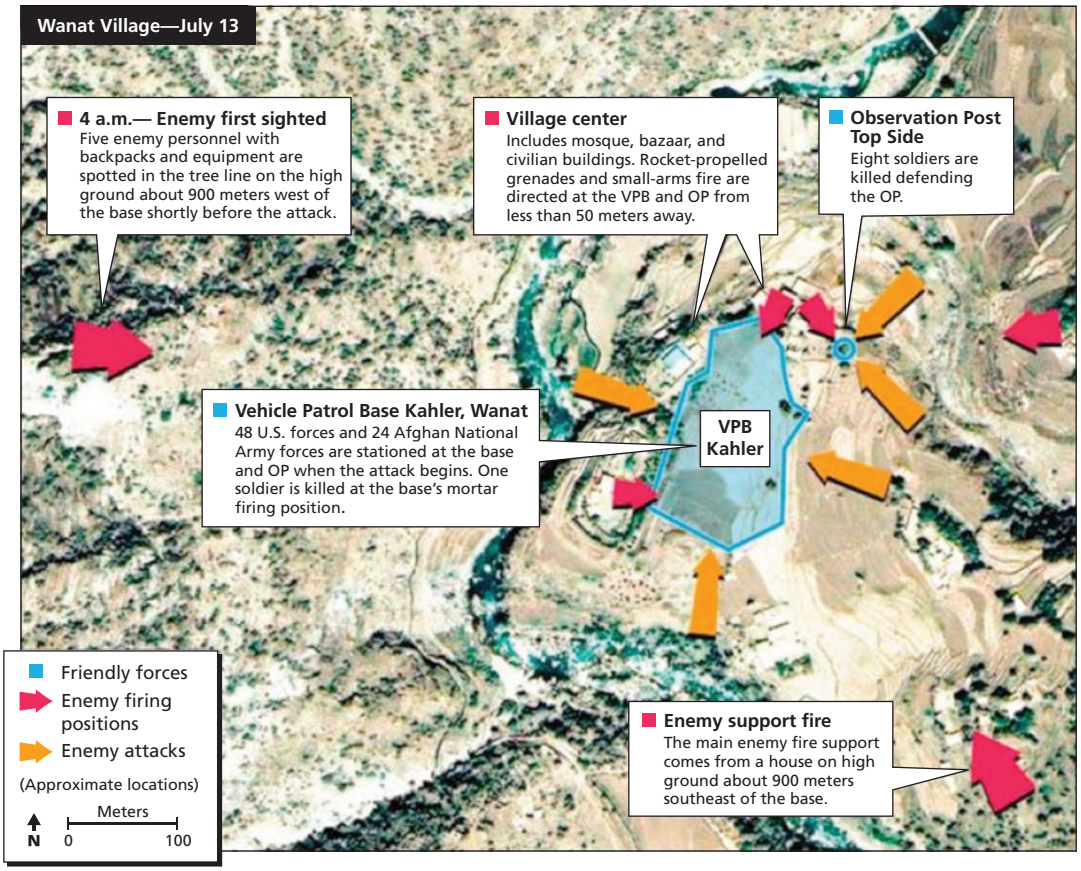
[10] For an in-depth look at events and conditions in Afghanistan, see A. Cordesman, "The Afghan-Pakistan War: Status in 2009," Washington, D.C.: Center for Strategic and International Studies, August 12, 2009.

[11] T. Ricks, "Inside an Afghan Battle Gone Wrong: What Happened at Wanat? (I)" *Foreign Policy*, January 28, 2009.

communications and suppressive ground fire. The organic 120 mm and 60 mm mortars had already been destroyed or otherwise rendered ineffective by insurgent semiautomatic and RPG fire at the outset of the attack. Most of the U.S. losses were sustained either at the observation post (OP), referred to as OP Topside located approximately 75 meters from the command post (CP), or in resupply and medical-evacuation movements for the OP. The location of the key events during the battle are shown and described in Figure 2.1.

After-action reviews noted that U.S. and ANA forces were insufficiently protected against a major attack. This was believed to be a result of inaccurate intelligence, strained relations with the local populace, bad weather, insufficient supplies, and the extremely isolated and difficult terrain in which the base was located.[12] Also, the COP was not yet fully operational with many of the necessary force protection assets in place.[13] Resupply and reinforcement by ground or helicopter were both challenging and dangerous given the remote location of the COP, the

Figure 2.1
Synopsis of the Battle at Wanat



SOURCE: *Army Times*.
RAND *OP329/1-2.1*

[12] H. Bernton and C. Phillips, "Study Gives New Details on Deadly Wanat Battle," *Army Times*, August 1, 2009.

[13] Because the Afghan contractors did not show up as planned, not all the Hercules Engineering Solutions Consortium (HESCO) barriers were adequately filled; this reduced soldier manpower available for active counter-reconnaissance patrolling within the adjacent village.

ruggedness and canalization of the terrain surrounding the COP, and the likely presence of Taliban insurgents along the approaches to the COP.

Nonetheless, only passing attention was given in the post-attack analyses to the surveillance advantage the Taliban insurgents had over the soldiers on COP Kahler. Specifically, they were on the high ground overlooking the COP and were in buildings directly adjacent to the COP. This lack of emphasis on the insurgents' terrain advantage is surprising, given the opportunity that it presented for any attacking force. Specifically, insurgent activities created a number of signatures that might have been detected and exploited with better surveillance capabilities. Possible signatures included (a) movement of enemy forces from the previously occupied COP at Camp Bella to the Wanat area; (b) weapons influx to the village and surrounding area; (c) interactions between insurgents and the local populace; (d) activity by the local populace to cover the sounds of insurgent movement; (e) movement, emplacement, and preparation of forces and weapons during the night before the attack; (f) exodus of local populace from the village before the attack; and (g) coordination signals before the attack. As it turned out, tactical warning was limited to the few minutes just before the attack.[14]

Interviews conducted by the authors with several other COP commanders, including COP Keating, which was also attacked under similar conditions to the battle at Wanat, tend to substantiate the importance of such intelligence and early warning information. Long-range, high-resolution sensors were essential for providing tactical information, which often enabled successful engagements at correspondingly long ranges, possibly providing a deterrent effect as well. Nevertheless, depending on the terrain surrounding the COP, the value of such long-range capability varied somewhat.

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[14] Ricks, 2009.

CHAPTER THREE

Analyzing the Battle Using Force-on-Force Simulation

To evaluate different options for improving the protection of the force, we recreated the battle as it might have occurred using an accredited Army force-on-force constructive simulation (Army Janus) and populated it with capabilities that were known to be in place at the time. This represents the baseline case. From this, we plan to conduct excursions from the baseline by providing new technologies and associated tactics, techniques, and procedures (TTPs) and observing the outcome effect in future simulations (in the forthcoming phases 2 and 3 of this research).

The first step in the analytic process was to obtain very high-resolution terrain data—at the 1 m level of resolution if possible—of the Wanat battle area. This was accomplished with the assistance of the Army Geospatial Center; personnel there provided Light (Laser) Imaging Detection and Ranging (LIDAR) data that were apparently collected only a few days before our official request.[1] These data consisted of 1 m resolution terrain data, centered on the COP location at Wanat.

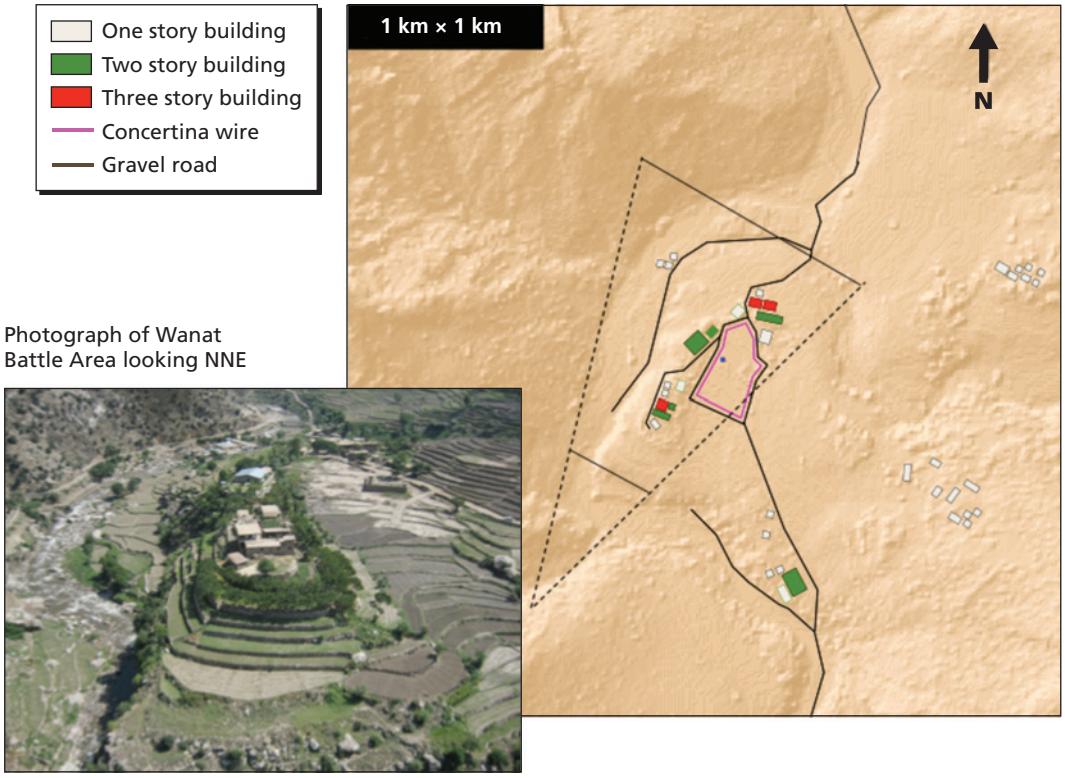
The next step in the analytic process was to populate the high-resolution geographic representation with roads, rivers, and buildings. These were placed over the terrain surface, as shown in Figure 3.1. Next, U.S. and ANA forces and their estimated firing positions, determined from images and accounts of the battle, were input. Taliban insurgents, their movements, and their timings were added, beginning with the point of the first RPG and heavy machine gun firing events. Weather conditions were characterized as degraded at first light (the time of the actual attack), with winds assumed to be strong enough to prevent the takeoff of unmanned aircraft system (UAS) platforms from the Jalalabad and Bagram airfields.

At a macro level, some indication of the difficulty with mobility over this terrain is seen from the slope analysis shown in Figure 3.2. The dark green north-south line represents the Waygul River and the surrounding area, which is comparatively flat. As noted above, days before the attack (July 8) components of COP Bella were moved to Wanat ~7 km south along the Waygul River, to what was initially VPB Kahler. From the figure, it is apparent that the large majority of the area is not traversable by vehicles (regions with slopes greater than 30° to 40°), and much of the area would have also given heavily combat loaded dismounted infantry a great deal of difficulty (slopes greater than 40° to 50°).

Deployed locations of the friendly forces in the simulation are shown in Figure 3.3. The image depicted is 1 km × 1 km. The ANA force is in the northern sector of the base (shown

[1] Level 5 (1 m) digital terrain data associates each 1 × 1 m patch of terrain or cell with its own elevation and slope. This particular piece of terrain was 1 km × 1 km and comprised one million measurements. LIDAR uses a laser beam to scan terrain from an aircraft, resulting in elevation measurements at the sub–1 m level.

Figure 3.1
Laydown of Buildings in Wanat Area for Simulation



SOURCE: U.S. Army, 2d Battalion, 503d Infantry Regiment, 173d Brigade (Airborne), "Battle of Wanat Storyboard and Brief," July 16, 2008.

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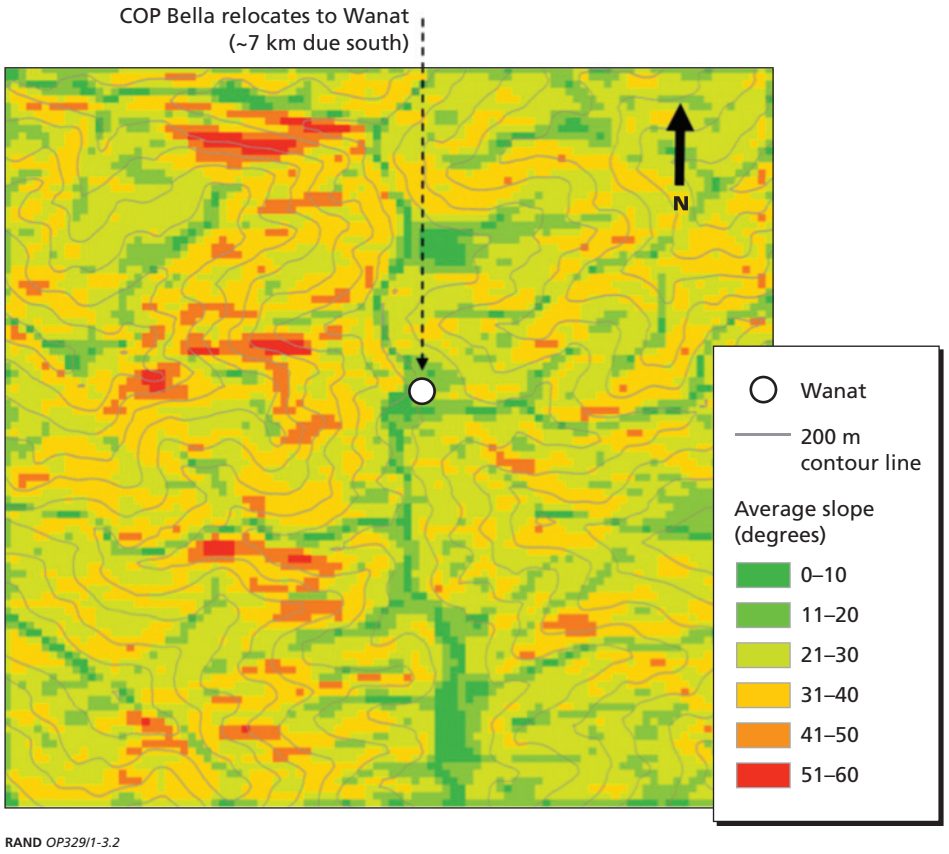
in green), while the other friendly positions are occupied by U.S. soldiers (shown in blue). The insert shows the location of OP Topside relative to the CP with a distance of separation at about 75 m. The grid lines represent 200 m spacing.

Figure 3.4 adds the estimated locations of the Taliban insurgents (shown in red), derived from various after action reports, before the initiation of the attack. The image depicted is 1 km × 1 km; the red grid squares are 200 m × 200 m. Notice the extremely close proximity of the enemy and friendly forces.

Much of the difficulty in defending the COP had to do with the relatively poor line-of-sight (LOS) available to U.S. defenders. This is mainly due to the downward-sloping terrain near the Waygul River and the resulting dead space.[2] Specifically, dead space is that area on the ground that may be within either sensor or direct fire weapons range but is neither observable

[2] Headquarters, Department of the Army, *The Infantry Rifle Platoon and Squad*, Field Manual No. 3-21.8, March 2007. Dead space is discussed in paragraph A-30. It is any fold or depression in the ground that prevents a target from being engaged from a fixed position. Paragraph A-81 of FM 321.8 discusses methods of determining dead space.

Figure 3.2
Digitized Slope Display of Terrain Around Wanat (10 km × 10 km)



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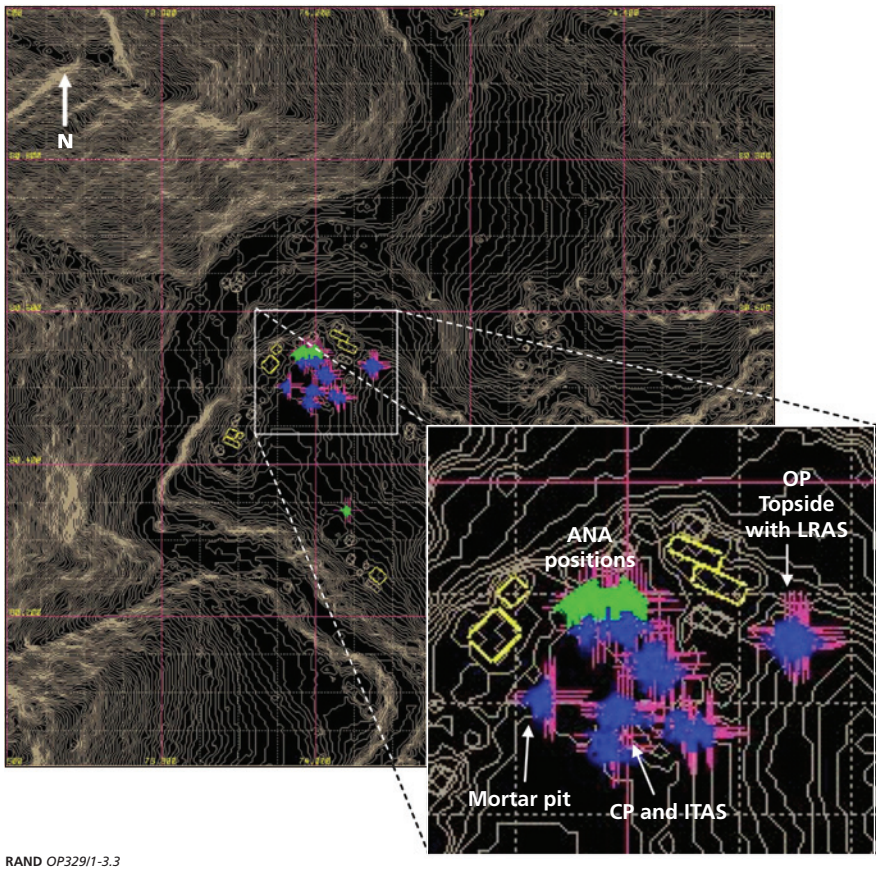
by LOS sensors nor coverable by direct fire weapons using either plunging[3] or grazing fire.[4] The black area in the figure represents the simulation-calculated dead space for COP Kahler. Additionally, the steep and jagged ridge lines, typical in this region, further reduced the LOS of the long-range sensors—the Long-Range Advance Scout Surveillance System (LRAS3) at OP Topside and the Improved Target Acquisition System (ITAS) at the CP. See Figure 3.5 for a depiction of the areas not under observation or surveillance before the attack. The image depicted is 1 km × 1 km. Taliban insurgents (shown by the white ovals) are all located in the dead space.

[3] Headquarters, Department of the Army, 2007. Plunging fires are discussed in paragraph A-32. Plunging fire occurs when there is little or no danger space from the muzzle of the weapon to the beaten zone. It occurs when weapons fire at long range, when firing from high ground to low ground, when firing into abruptly rising ground, or when firing across uneven terrain, resulting in a loss of grazing fire at any point along the trajectory.

[4] Headquarters, Department of the Army, 2007. Grazing fires are discussed in paragraph A-31. Automatic weapons achieve grazing fire when the center of the cone of fire does not rise more than 1 m above the ground. Grazing fire is employed in the final protective line (FPL) in defense and is possible only when the terrain is level or uniformly sloping. Any dead space encountered along the FPL must be covered by indirect fire, such as from an M203. When firing over level or uniformly sloping terrain, the machine gun M240B and M249 can attain a maximum of 600 m of grazing fire. The M2 can attain a maximum of 700 m.

Figure 3.3
Deployment of U.S. and ANA Forces in Constructive Simulation (10 km × 10 km)



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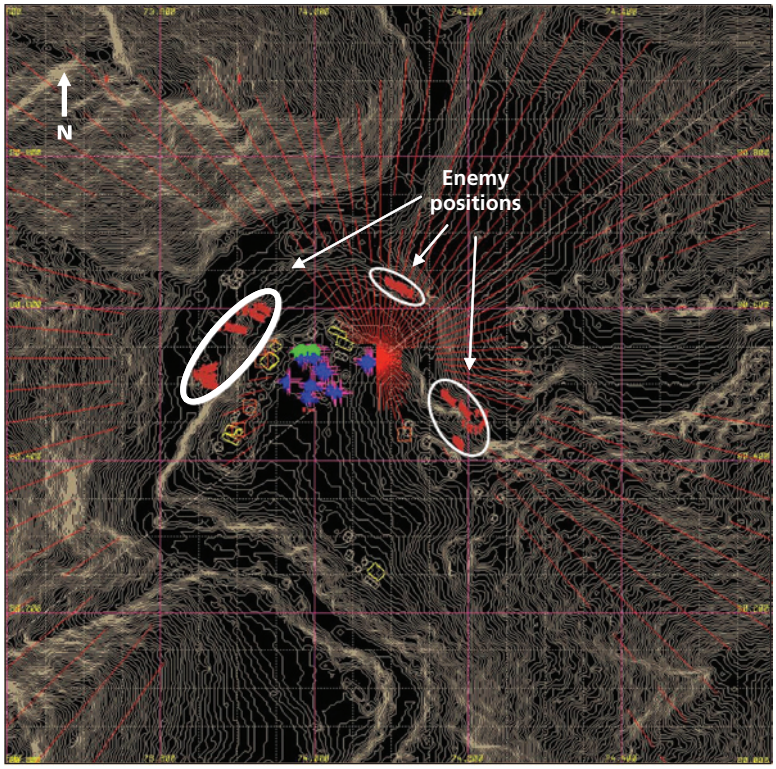
The LRAS3 at OP Topside was among the first of the long-range systems taken out in the initial enemy exchange. Specifically, Taliban insurgents conducted an infiltration into the buildings directly adjacent to the COP. As a result, what amounted to relatively poor LOS to begin with was even further reduced at the onset of the battle. Figure 3.6 shows the visibility without the LRAS3 at OP Topside.[5] The expansive northern sector, which is the area most traversable by foot, is now dead space.

The ITAS and the heavy weapons at the CP were among the first systems to be attacked by the Taliban infiltrators. Some of their firing positions, located in the buildings directly adjacent to the COP, are shown in Figure 3.7. After this initial engagement, which neutralized much of the friendly force advantage, the larger attack occurred.

With some adjustments, the simulation runs resulted in somewhat similar outcomes to those in the actual battle. The initial heavy volley of RPG fire destroyed or damaged most of the vehicles and suppressed fires from U.S. forces. Interestingly, the simulation initially produced a larger number of U.S. casualties than those that occurred in the actual battle. This

[5] The sensor height for the LOS calculation was 2 m above ground, and the target height was 1 m above ground. The terrain resolution for this analysis was 4 m post spacing in the horizontal and 0.1 m in the vertical dimension.

Figure 3.4
Deployment of Taliban Insurgent Forces in Constructive Simulation



RAND *OP329/1-3.4*

result could be due to a number of factors including insufficient protection of the defenses assumed in the simulation or too much capability being attributed to the enemy force in the simulation.[6]

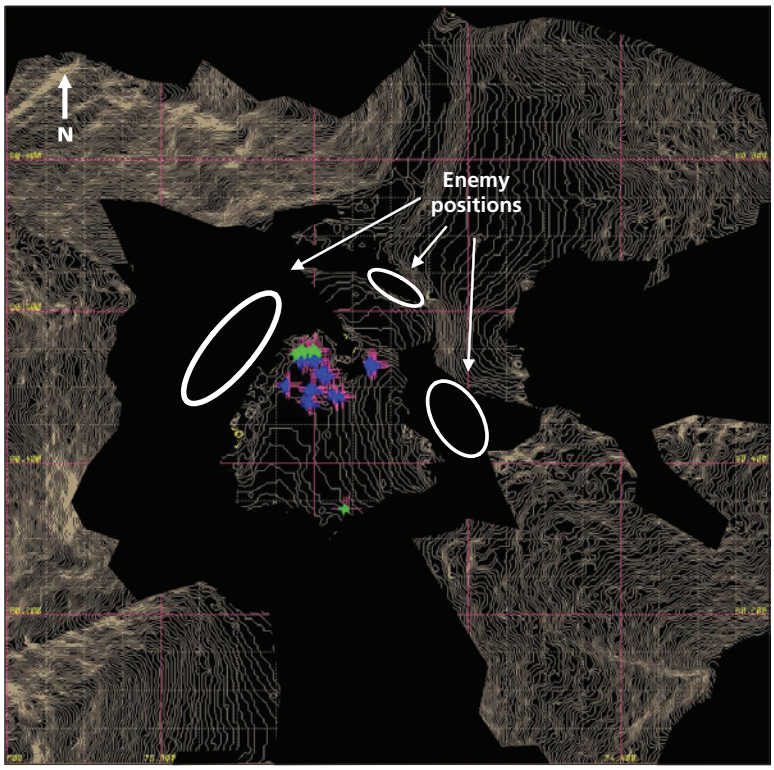
As we conducted the analysis, we collected several measures of performance and effectiveness for each element of the force. For example, surveillance systems, the LRAS3, and the ITAS in the baseline force, were assessed on their ability to provide coverage, timeliness, and acquisition quality.[7] Protection was assessed for the CP, the OP, and any additional force elements in the form of engagements and kills. Lethality was evaluated on the basis of kills and suppression of the enemy forces. Other ancillary measures, such as force burden (the cost associated with the addition of a capability in terms of manpower or airlift [weight/volume]) and force mobility, were also assessed.

A major objective of quantifying these many different measures of performance, particularly for surveillance, was to determine whether better situation awareness and protection would have influenced the following stages or events in the battle:

[6] Available video suggests that some of the Taliban fighters were employing unaimed fire from their fighting positions and just shooting in the general direction of U.S. forces. As noted above, U.S. and NATO forces have known for some years that while the Taliban fighters are often highly motivated, they are often poorly trained and are unable to use their weapons to their maximum potential.

[7] Acquisition quality includes detection and recognition or identification of enemy and noncombatant individuals.

Figure 3.5
Terrain Blockage Areas or Dead Space (Shown in Black) Around the COP



RAND *OP329/1-3.5*

- sensing of insurgent movement from the area of the earlier COP Bella attacks
- performance of dismounted patrols around the base
- tracking of insurgents during the night before the attack
- better placement of the OP and defenses against the attack
- reinforcement of positions during the attack, especially the dangerous movements between the base CP and the OP
- greater number and volume of fire and of mortars
- effectiveness and responsiveness of 155 mm artillery fires and close air support.

Figure 3.6
Dead Space (Shown in Black) Around the COP Without LRAS3 (1 km × 1 km)

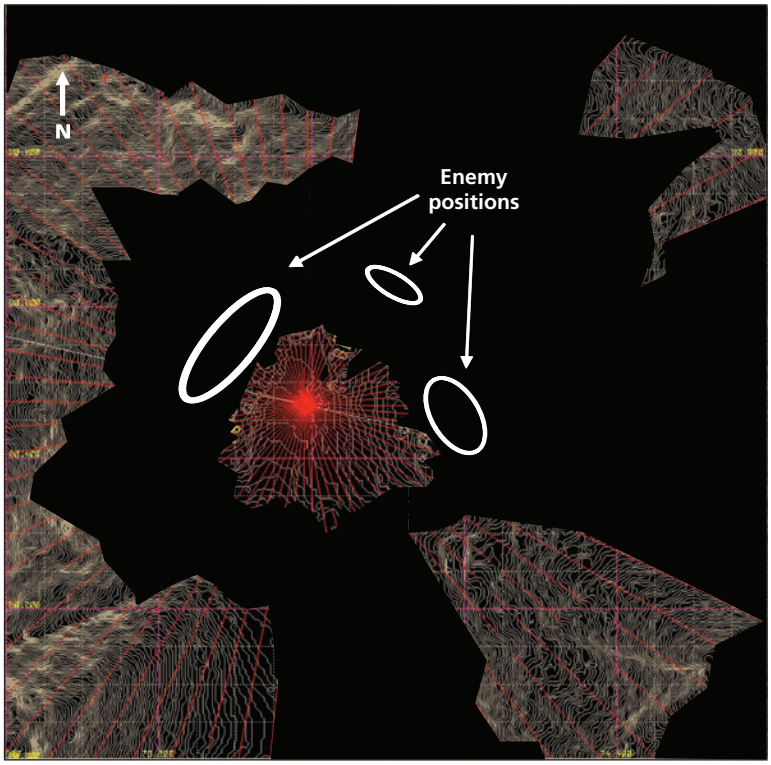


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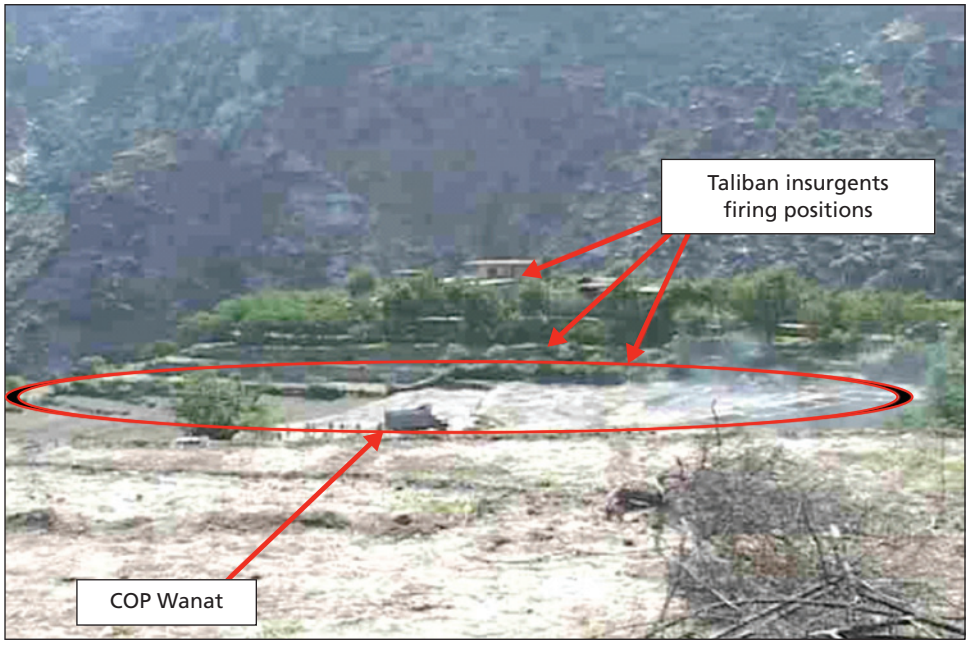
Figure 3.7
Proximity of Taliban Insurgents' Firing Positions



SOURCE: U.S. Army, 2d Battalion, 503d Infantry Regiment, 173d Brigade (Airborne), 2008.
RAND *OP329/1-3.7*

CHAPTER FOUR

Key Findings from the Baseline Analysis

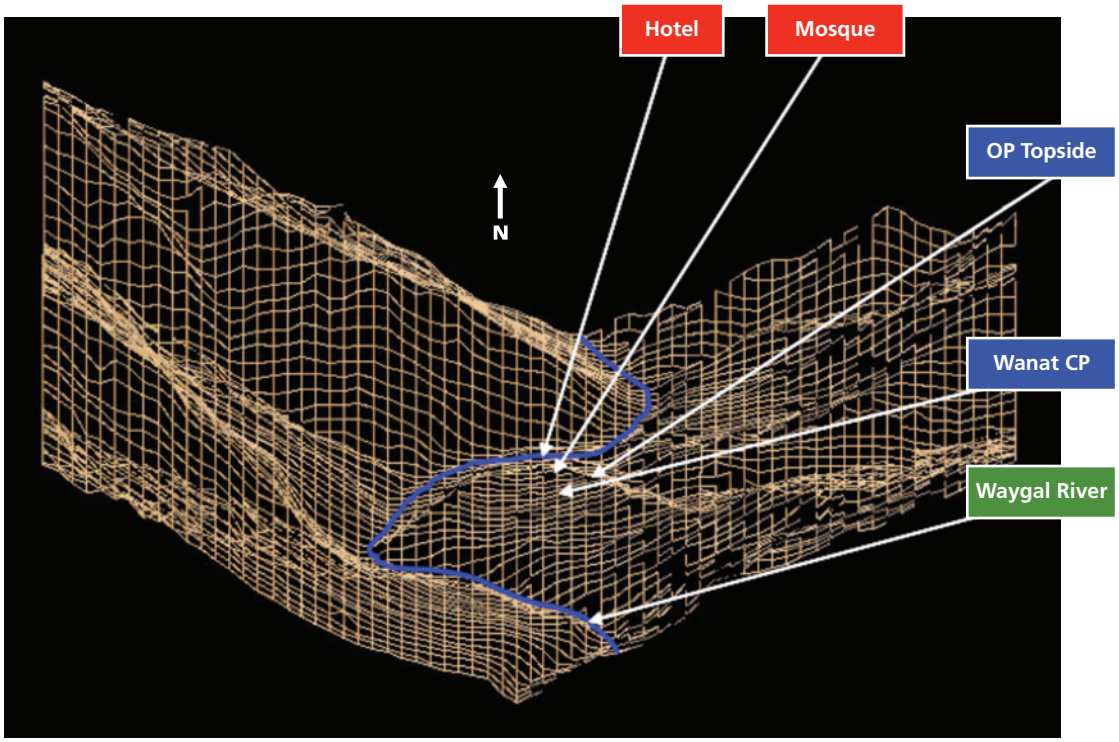
One of the first research questions asked was, How many of the casualties were attributable to the transitional nature of the COP? That is, could losses be attributed to the fact that the small unit that was deployed to Wanat had not yet completed its defensive position? To address this, two different baseline cases were constructed in simulation. The first was representative of the COP as it existed at the time of attack; the second was representative of the outpost as it might have been, had the COP and the corresponding fighting positions been completed. Simulation results suggest that there would be some improvement in defense with a fully operational outpost, with about a 30 to 40 percent reduction in casualties; however, we note in both cases that the casualties were unacceptably high (note that in the actual attack, the platoon suffered 75 percent casualties (9 killed and 27 wounded), so a 40 percent reduction in casualties still translates to a 45 percent casualty rate overall).

An assessment of engagement locations reveals a distribution that was bimodal in nature. About half of the enemy engagements occurred at ranges of 50 m or less and some occurred within 10 m. Thus, the second research question explored was, Given the proper application of a Mission, Enemy, Terrain, Troops–Time Civilians (METT-TC) analysis, how could this have occurred? As noted above, the mission involved providing security to the residents of the village of Wanat. The land that was available to U.S. forces was selected by the village elders months before the attack. This land was adjacent to the village, but it also had nearly 360 degrees of exposure to surrounding high ground.

Furthermore, the ground immediately surrounding the COP was visibility-restricted by either the village buildings, including a mosque, or terrain LOS restrictions creating very large areas of dead space, as illustrated in Figure 3.6. The bulk of the remaining engagements occurred at longer ranges, several hundred meters, against enemy fighters advantageously positioned on the high ground. Hence, the terrain for the purposes of conducting a defense was tactically undesirable. See the wire diagram in Figure 4.1 for a more detailed pseudo-3-D description of the surrounding high ground and the degree of terrain elevation that existed.

Although there were indications that an attack was imminent, neither the intelligence nor the assets needed to provide sufficient early warning were available. Enemy fighters' familiarity with the terrain allowed them to avoid detection from OP Topside. At the same time, the UAS that were expected to cover the dead space, i.e., areas on the ground not observable by the OP through LOS restrictions, were grounded because of high winds. As a result of this and in conjunction with the enemy application of stealth measures, such as the use of thermal blankets to mask warm body signatures from thermal sensors, the enemy forces were able to position themselves within very close range before the first shot was fired. Moreover, to optimize the effects of their initial fires, enemy weapons were first directed at the organic long-range target-

Figure 4.1
Wire Diagram Showing Terrain Elevation Surrounding COP



RAND *OP329/1-4.1*

ing systems and heavy weapons on the outpost. RPG fire from the mosque took out the command High-Mobility Multipurpose Wheeled Vehicle (HMMWV) that was only 50 m away. Other targets hit early by the Taliban included the HMMWV-mounted tube-launched, optically tracked, wire-command linked guided missile (TOW) with the ITAS, the HMMWV with the .50 caliber machine gun, the ground-mounted LRAS3 sensor at OP Topside, and the 120 mm mortar. The 60 mm mortar was left in an unprepared fighting position and was unreachable because of suppressive small arms fire. The mortar would never be put into action throughout the fight.

Despite the large number of U.S. casualties associated with the battle of Wanat, our analysis suggests that the outcome could have been worse. The constructive simulation that we applied was initially configured to represent a well-trained Soviet-style force using comparable TTPs, as well as data that indicated corresponding high proficiencies with weapons.[1] To account for the particulars of the Taliban force, reductions in capability were made in the form of reduced accuracy and rate of fire. Our analysis, along with captured video of the actual combat, substantiates that a good portion of the enemy fire was unaimed, possibly suppressive in nature. To account for this, the probability of hit of small arms fire was decreased in the simulation. Additionally, the rate of fire, particularly for the RPGs, was reduced to reflect the observed performance of Taliban forces in this engagement. These reductions are consistent

[1] The database used for the analysis was originally developed by Army Materiel Systems Analysis Activity (AMSAA).

with in-field assessments that suggest a lower combat skill level associated with Taliban forces than might be associated with a well-trained modern army force. Regardless, because many of the engagements occurred at very close range, superior U.S. combat training and technology were not relevant, because even lesser trained troops can be as deadly as highly proficient troops in close quarters combat.[2]

These results suggest that an opportunity to improve small unit operations exists. Specifically, if engagement ranges could be increased, inherent U.S. force strengths could be brought to bear. Interviews with several other COP commanders substantiate the importance of such intelligence and early warning information for providing both increased time and distance preceding potential engagements, where greater effectiveness of force can serve as a deterrent. Furthermore, given the terrain constraints associated with the location of the COP, the criticality of such intelligence and information can vary. In cases were the terrain is less desirable for a defense, the more such information becomes essential as an offset. While clearly there are different ways to accomplish this, one way involves improving the tactical capabilities that reside directly within the small unit.[3]

A first step toward doing this might be to focus on eliminating or at least reducing the dead space that might exist around the COP. This can be achieved through more capable organic sensors, better positions with higher elevation, and more robust inorganic sensors that cannot be easily grounded, e.g., UAS. By eliminating this dead space, the enemy's opportunity for surprise is greatly reduced. Additionally, improved firepower might improve battle outcomes, whether organic to the small unit or close support provided by adjacent units (not applicable here as the only adjacent unit was Camp Blessing ~8 km to the south). Also, a number of vehicle protection systems could be applicable to such small unit deployments. Overall, a number of additional alternatives exist for improving the survivability and firepower of such small units. The next section describes several possible initiatives that could be undertaken to improve small unit operations. While described here as general "initiatives," they will be refined and evaluated in the next phase of the research.

Possible Small Unit Protection, Surveillance, and Lethality Options

Based on the analysis to date, it appears that different technologies and corresponding TTPs could be used to improve the survivability and effectiveness of small units, such as the platoon at Wanat. These include the ability to provide covered firing positions more rapidly; robust airborne intelligence, surveillance, and reconnaissance (ISR) platforms (organic or remotely linked); perimeter security systems; precision weapons; obscurants; command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) aids; and possibly non-lethal weapons for crowd control.[4] Of course, not all of these are feasible or even

[2] According to the COP Keating commander, the enemy was literally "within stabbing range" during some of the combat that occurred there.

[3] Alternatively, one way to overcome the terrain disadvantage might be to have commanders choose the location of the COP or move their OP to a higher position with commanding views; however, this may overextend their manpower and compete with the desire to be close to villages for counterinsurgency operations.

[4] Through the course of this analysis, some questions have been raised on the implementation of standard operating procedures, along with the availability of the technologies to support them, e.g., access to digital sand tables. This will be

effective with a small, isolated platoon-sized base. We plan to organize a sequence of increasingly sophisticated combinations of improvements for examination in simulation in phase 2 of this analysis.

Baseline Improvement Themes

Expedited Protection of the COP

This initiative raises the possibility of establishing better and earlier protection for the small unit. In this case, it may be possible to develop a controlled cratering charge that can facilitate preparation of defensive positions where collateral damage is of great concern, including individual fighting positions. These defensive positions produced by cratering charges can take advantage of the inherent protective qualities of the natural terrain and may dramatically reduce the early requirement for heavy earth moving equipment.

More Robust Aerial Surveillance

Organic UAS, aerostats, or tall towers provide both wide area surveillance and narrow-field-of-view identification, tracking, and targeting. There are many possible combinations of platforms and sensors, but the initial runs might concentrate on (a) class II UAS with small cooled forward looking infrared (FLIR) and (b) aerostat with a modest, e.g., 200 lb, payload. These could potentially provide coverage over a limited area around the base.

Improved Tactical Weapons and Firepower Alternatives

Although clearly many of the previous analyses and after-action reports highlight the importance of intelligence and early warning information, it is also critical to provide units with an ability to fully exploit this information as necessary. This may include highly accurate direct fire, beyond line of sight weapons, and indirect fire systems. Also, this might include higher rates (volume) of fire, such as automated miniguns or possibly some controlled thermobaric weapons.

Ultimately, some combination of the above categories of capabilities may be required to provide a robust response to enemy countermeasures. Composition of these capabilities will be discussed with various Army and OSD offices.

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addressed in phase 2 of this series.

CHAPTER FIVE

Next Steps

This first phase of research has completed the data collection, baseline terrain analyses, and initial specification of options for improving the survivability and effectiveness of the force at COP. The next phase will focus on a simulation-based exploration of the increasingly sophisticated series of technological and doctrinal options outlined above. This will be an iterative process, with each option varied by adjusting its mix of systems, location of assets, and tactics. Variations in the enemy attack patterns will also be simulated to determine the robustness of the options.

We also plan to employ additional analytical tools to provide further insights into the battle and its dynamics. These will include terrain analysis, constraint and sensitivity analysis, and an examination of network issues. At the end of each phase, we will provide insights and recommendations that will cover such areas as surveillance platforms, protection systems, and command and control functions (including local and remote processing and exploitation and dissemination responses). These analyses should produce insights applicable to a wide range of situations involving the operation and protection of isolated bases in difficult terrain.

At all times, we will need to be mindful of the personnel requirements, equipment load, and training associated with these options. The burden of some of the choices may make them applicable only to the most vulnerable outposts. A consequence of this may be the need for a highly variable task-organized structure for these units assigned to these high-risk locations. These issues will also be explored in the next phase of research.

Time and resources permitting, we will also explore some possible variations to the threat. The Taliban of 2009–2010 is (fortunately for U.S. and coalition forces) generally armed with older model weapons, such as 1970s-era RPGs, older model small arms and machine guns, lightweight mortars, and rather inaccurate rocket systems. While these systems can certainly inflict damage and casualties, they are not state-of-the-art. Should the Taliban acquire more modern weapons, however, they will pose a greater threat. Understanding the possible implications of plausible Taliban weapons enhancements should also be a goal for future analysis.

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